IN THE CLAIMS:

Please amend Claims 1-8, 10, and 11 as follows.

1. (Currently Amended) An information processing method of dividing a feature space in which a point set given as learning patterns is present to form a classification tree on the basis of the learning patterns, comprising:

~~the~~ a linear combination feature amount generation step of generating a plurality of new feature ~~amount~~ amounts by a linear combination of ~~the~~ feature amounts of the learning patterns;

~~the~~ a hierarchization pre-processing step of forming a plurality of hierarchical structures of the learning patterns by hierarchizing~~, in advance,~~ each of the plurality of the new feature ~~amount~~ amounts generated in ~~the~~ said linear combination feature amount generation step; and

~~the~~ a classification tree generation step of generating a classification tree on the basis of the plurality of hierarchical structures formed ~~learning patterns hierarchized~~ in ~~the~~ said hierarchization pre-processing step.

2. (Currently Amended) The method according to claim 1, wherein in ~~the~~ said linear combination feature amount generation step, a coefficient of the linear combination is selected from a fixed set of coefficients.

3. (Currently Amended) The method according to claim 1, wherein in ~~the~~ said hierarchization pre-processing step, each of the plurality of the new feature ~~amount~~ amounts is hierarchized on the basis of a normal vector of ~~the~~ a hyperplane formed by the

linear combination in said ~~the~~ linear combination feature amount generation step and a hyperplane having the normal vector.

4. (Currently Amended) The method according to claim 3, wherein the hyperplane used in ~~the~~ said hierarchization pre-processing step includes a hyperplane perpendicular to ~~the~~ a feature amount axis.

5. (Currently Amended) The method according to claim 1, wherein

~~in the hierarchization pre-processing step, a hierarchical structure is formed such that the structure is hierarchized for each feature amount, and~~

in ~~the~~ said classification tree formation step, a classification efficiency is calculated from ~~a~~ the hierarchical structure of each of the plurality of the new feature ~~amount~~ amounts at each node, a feature amount used on the basis of the classification efficiency is determined, and a classification tree is formed.

6. (Currently Amended) The method according to claim 1, further comprising ~~the~~ a recognition step of recognizing a newly input pattern using the classification tree formed in ~~the~~ said classification tree formation step.

7. (Currently Amended) The method according to claim 1, wherein in ~~the~~ said hierarchization pre-processing step, each of the plurality of the new feature ~~amount~~ amounts is hierarchized on the basis of a range of values which can be taken by the learning patterns.

8. (Currently Amended) The method according to claim 1, wherein in ~~the~~ said hierarchization pre-processing step, each of the plurality of the new feature ~~amount~~ amounts is hierarchized on the basis of a profile of the learning patterns.

9. (Original) The method according to claim 1, wherein the learning pattern is any one of an image pattern, a speech pattern, and a character pattern.

10. (Currently Amended) An information processing apparatus for dividing a feature space in which a point set given as learning patterns is present to form a classification tree on the basis of the learning patterns, comprising:

linear combination feature amount generation means for generating a plurality of new feature ~~amount~~ amounts by a linear combination of ~~the~~ feature amounts of the learning patterns;

hierarchization pre-preprocessing means for forming a plurality of hierarchical structures of the learning patterns by hierarchizing~~, in advance,~~ each of the plurality of the new feature ~~amount~~ amounts generated by said linear combination feature amount generation means; and

classification tree generation means for generating a classification tree on the basis of the plurality of hierarchical structures formed ~~learning patterns hierarchized~~ by said hierarchization pre-processing means.

11. (Currently Amended) A program stored in a computer-readable medium for controlling a computer to divide ~~dividing~~ a feature space in which a point set given as

learning patterns is present to form a classification tree on the basis of the learning patterns, the program comprising ~~causing a computer to function as:~~

linear combination feature amount generation program codes instructing the computer to generate ~~means for generating~~ a plurality of new feature ~~amount~~ amounts by a linear combination of ~~the~~ feature amounts of the learning patterns;

hierarchization pre-preprocessing program codes instructing the computer to form ~~means for~~ a plurality of hierarchical structures of the learning patterns by hierarchizing~~, in advance~~, each of the plurality of the new feature ~~amount~~ amounts generated by the computer in response to instructions from said linear combination feature amount generation program codes ~~means~~; and

classification tree generation program codes instructing the computer to generate ~~means for generating~~ a classification tree on the basis of the plurality of hierarchical structures formed ~~learning patterns hierarchized~~ by the computer in response to instructions by said hierarchization pre-processing program codes ~~means~~.